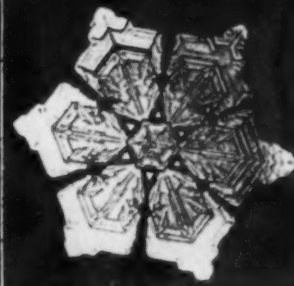
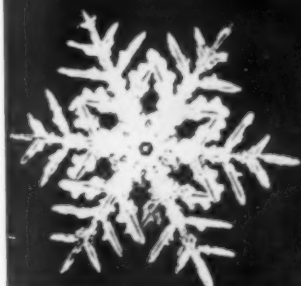
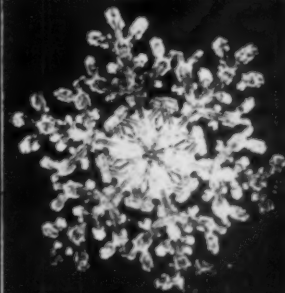
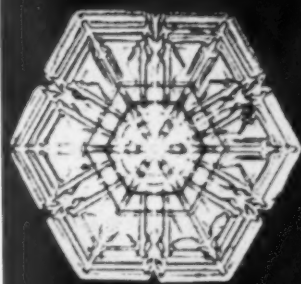
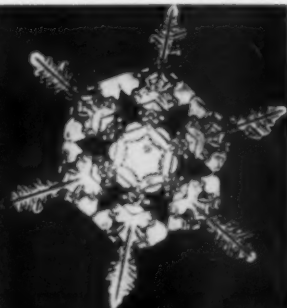
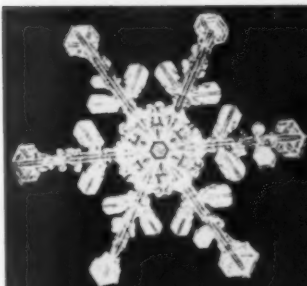


# Earth Science

Rockhounds' NATIONAL Magazine

W  
I  
S  
H  
I  
N  
G  
  
Y  
O  
U  
  
A  
  
M  
E  
R  
R  
Y  
  
X  
M  
A  
S



A  
N  
D  
  
A  
  
H  
A  
P  
P  
Y  
  
N  
E  
W  
  
Y  
E  
A  
R

NATURE'S CHRISTMAS SEALS

35¢

December Issue, 1958

# Gem Cutters Guild of America

4132 Madison Ave., Brookfield, Ill.



FEATURING  
SHOW PIECE SLABS AT  
PEBBLE PRICES TO  
MEMBERS ONLY  
JOIN TODAY

RECEIVE REAL TROPHY MATERIAL

*UNIQUE FOR CHRISTMAS GIFTS*

One masterpiece gem quality slab will be mailed to you each month; 12 months individual membership only \$12.00 (Tax and postage included U.S.A. only) We will send you 12 different gem slabs worth more than you pay and worth bragging about, if you are not satisfied anytime during your membership we will refund unused portion.

Many many beautiful varieties of show piece lapidary slabs await you . . . Here are just a few . . . the best of the beautiful Montana agate . . . Exotic Mexican flame agate . . . Bird of Paradise agate . . . Blue Green Chrysocolla, and truly blue rich in color Azurite . . . Yes . . . and even Jade . . . Your free gift as a new member will be a slab of Italian blue gold stone.

Free information service on lapidary materials and methods year around. Re-order privileges to members who may wish more of any material we send thru out the year. These will be priced slightly higher but with your membership discount they will still be lower in cost than average rock shop prices. (While they last, so order early)

As a member of this association you will receive the benefits of volume buying top grade cutting material that would at retail rock shop prices cost you more per piece. We are doing business by *mail order only*. Watch for our announcement for the opening of the TROPHY ROCK SHOP.

Our show piece slabs are available to non-members by mail but no discount. Enjoy a membership yourself and give one to a friend for Xmas. To insure Xmas delivery, orders must reach us by Nov. 25th. A gift card . . . our free gift . . . and a trophy slab will be sent all in one package along with the news that more is to come. Many forthcoming advantages to members throughout the year.

We welcome advanced and novice lapidary hobbyists.

We are hoping professionals and dealers will join us too for they are qualified judges of good material.

We welcome competition too for that means the customer benefits and learns . . . and an educated buyer appreciates quality.

We want you to learn to depend on us for the best . . . that's all we've got Even if you are a fussy collector or just curious, write us, ask questions . . . that's how we learned.

Join today . . . you'll be glad you did and we'll be glad to have

**YOU**

AS A MEMBER OF THE  
GEM CUTTERS GUILD OF AMERICA  
SINCERELY CLARENCE AND JANE THATCHER

NAME .....

ADDRESS .....

CITY..... STATE.....

ENCLOSE \$12.00 CHECK..... OR M.O..... FOR EACH MEMBERSHIP.....

# Earth Science

\$2 a YEAR

Vol. 11, No. 6

Official Publication of the Midwest Federation of Mineralogical Societies.

Published Bi-monthly: February, April, June, August, October, December,  
at Mount Morris, Illinois

Second Class Mail Privileges Authorized at Mt. Morris, Illinois

## CONTENTS, DECEMBER ISSUE, 1958

EDITOR'S MEMO PAD	4
Importance of Club Bulletins—Snow Crystals, Nature's Christmas Seals—Book Reviews.	
MIDWEST MINERAL CLUB NEWS	6
by Mrs. Bernice Rexin A boiled down digest of what's going on in the Federation.	
VOLUNTEERS FOR THE ROCK PILE!	9
by Nancy Gibbons Zook A down to gravel narrative of what an average field trip may be like, with a liberal sprinkling of valuable Rockbound information.	
THOMSONITE, A DAINTY GEMSTONE	12
by Dr. J. Daniel Willems Expert knowledge delightfully told by the author of that authoritative book, "Gem Cutting."	
URANIUM OCCURRENCE IN NEW MEXICO	15
by T. O. Evans A sequel to an article on prospecting for Uranium, by the same author in our March-April issue.	
ROCK HOUNDS COME TO TOWN!!!	16-17
Courtesy of "WE" When Rockhounds come to town there is always something doing—see for yourself. Illustrated.	
INDEX TO ADVERTISERS	28
AUTHOR AND TOPIC INDEX: Volume 11, 1958	29-30

PUBLISHED BI-MONTHLY by The Earth Science Publishing Company, Incorporated, Editorial and Circulation Offices, Box 1357, Chicago 90, Illinois. *Business Manager*, Dr. J. D. Willems; *Treasurer*, Orval M. Fether; *Advertising Manager*, Earl D. Cornwell; *Subscription Manager*, William H. Allaway. • SUBSCRIPTIONS: \$2.00 per year, United States and its possessions, and Canada; elsewhere \$2.50. Advertising rates on request. Address Box 1357, Chicago 90, Illinois. • EDITED by Ben Hur Wilson, 406 Grover St., Joliet, Illinois; *Associate Editor*, William H. Allaway; *Club Editor*, Mrs. Bernice Rexin; *Editorial Staff*, William A. Bingham, Frank L. Fleener, Russell P. McFall, Kirtley F. Mather, H. H. Nininger, Willard H. Parsons, Richard M. Pearl, J. Daniel Willems, C. W. Wolfe, H. P. Zuidema. • EARTH SCIENCE is receptive to articles of earth science interest. Manuscripts, photographs, sketches will not be returned unless accompanied by ample first-class postage. Permission to quote or reprint articles from this magazine will be considered upon written request. Communications for editorial consideration should be sent to the *Editor in Chief*, Ben Hur Wilson, 406 Grover St., Joliet, Illinois. The Earth Science Publishing Company makes every effort to select its articles and advertising carefully in order to merit the confidence of our readers, but assumes no responsibility for the statements and opinions expressed by contributors and/or advertisers in the magazine. • CHARTER LIFE SUBSCRIBERS: John C. Bohmker, R. E. Caliga, H. D. Cohn, J. E. Farr, H. T. Perry, Theodore C. E. Reich, Sr., Chicago Rocks and Minerals Society, Earth Science Club of Northern Illinois, Marquette Geologists Association. (These subscriptions are available at \$50.00.)

Copyright 1958 by The Earth Science Publishing Company, Incorporated. All rights reserved.

## Editors' Memo Pad

**WHY THE CLUB BULLETIN:** *The great importance of translating knowledge into print.* These were subjects stressed by the speakers at the Club Bulletin Editor's breakfast held in connection with the 1958 Midwest Federation convention at Downers Grove last June. Some eighty persons, editors and guests were present and listened attentively to these timely discussions.

Following are some pertinent points brought out with which we are in complete agreement and which we feel should be more often emphasized in our thinking. 1) The importance of the Club Bulletin cannot be overlooked. Without doubt, considering all Bulletins published, large or small; good, bad or indifferent, the sum total of all informative material carried is far greater than that of all the Mineral magazines combined,—and selectively the quality of the articles also is probably quite on a par with the average magazine articles.

2) The Bulletin editor's job is indeed quite important, possibly the most important of any of the club officers, either elective or appointive. If he (or she) should take the position seriously, he will probably contribute definitely more to the group welfare, by sustaining member interest, and in many other ways than he or many of the members will ever fully realize. Also, we regret to say that for all of his time and energy he will perhaps receive little thanks, and frequently much criticism.

3) The importance of getting mineral information into print can scarcely be over estimated, be it either quantitative or just some bit of tag end knowledge that may perhaps be known only by some single individual, through some personal observation or discovery. It is self evident that should these facts not in some way be recorded in permanent form they will eventually be forever lost to science and to posterity. It appears then that there can be no better or simpler manner in which to preserve this information than through the pages of the local club bulletin, from which it may eventually find its way into more permanent form.

4) Therefore—should we not encourage our members, regardless of their literary experience or ability to prepare and hand in such notes as may come to their attention, being mindful that a little careful and judicial editing, with permission of the author, may sometimes be helpful. It often happens that after a member has once 'broken into print' his personal interest and pride in seeing his writings on the printed page may be a challenge that will later aid him in producing other articles which may be very much more worthwhile.

5) In conclusion, this brings up the inevitable question as to how all such valuable information may be permanently preserved so that it will be available to those who may be in need of it in the future. This we realize, does pose a tremendous problem, concerning which altogether too little thought has been directed to date. Such problems as collecting the material, a permanent archive, cataloging, and the dissemination of the knowledge, et cetera, cannot be done by any single individual or club, but could well be done by an endowed Mineral Science Foundation, set up for the purpose in some central location under the auspices and direction of the American Federation, the A.G.I., or some great University that might become interested.

**OUR COVER PHOTO:** *Snow crystals are beautiful.* Nothing it seems can be more Christmasy than snow, and how disappointing, not only to the children but to adults as well, is the lack of a—"White Christmas." Few people ever realize that snow is a mineral, and that water in its various forms,—gaseous, liquid and solid (ice), is by far the most common and important mineral on Earth.

Snow crystals are without doubt one of the most, if not the most beautiful objects of creation, and strange as it may seem without small microscopic particles of other minerals (dust) snow crystals would never form in the atmosphere. Ada Swineford, writing for the Kansas State Geological Survey has this to say on the subject,—

"From snow to clay seems a long jump— or is it?

"The snow that jams traffic and crumples fenders can be a source of delight and wonder to anyone who examines its flakes under a magnifying glass. Growing perhaps around a tiny invisible nucleus of salt or dust in the cold upper atmosphere, the snow crystal may be a complex, lacy, six-pointed star of amazing symmetry by the time it reaches the earth.

"Whatever their shapes, snow crystals are a reminder of the crystalline character of nearly all solid substances and of a beautiful order in the fundamental arrangement of nature. In the absence of snow, one of the best places to look for crystal form is in the minerals that we find in the rocks. Some of the best-known crystals in rocks are cubes of galena (lead ore) and salt, prisms and pyramids of calcite and quartz, curved rhombohedrons (saddle-shaped crystals) of dolomite, shining diamond-shaped tabular forms of gypsum, and cubes and octahedrons of pyrite (fool's gold).

"Even in the absence of external crystal form, however, the orderly arrangement of atoms may still be observed in nearly all minerals and other solids. With the aid of the microscope and x-ray methods we can see that all the rocks with which we are familiar—sand and soil, limestone and clay—consist of crystalline material."

\* \* \* \*

#### BOOK REVIEWS:

**COLORADO GEM TRAILS AND MINERAL GUIDE** by Richard M. Pearl. Completely re-written, expanded from the popular *Colorado Gem Trails*—this is a new book. 176 pages; 37 maps! Latest information on minerals and gems to be collected, with route guides, descriptions, in fact, no fewer than eleven features of help to the gem and mineral collector.

The author, a lifelong resident of Colorado, is Professor of Geology at Colorado College, Colorado Springs. He is an authority on the minerals of his native state and without doubt the best qualified person to write on the collecting areas of Colorado. He was one of the organizers and early president of the American Federation, and is Past President and an active worker in the Rocky Mountain Federation.

Clothbound, Ready. \$2.95. SAGE BOOKS, 2679 South York, Denver 10, Colo.

\* \* \* \*

**"GETTING ACQUAINTED WITH MINERALS,"** by George Letchworth English, Revised by David E. Jensen, Head, Geological Division, Ward's Natural Science Establishment, Inc. McGraw-Hill Book Co., Inc. 1958 \$6.95.

For those who may not be familiar with the original publication, written by the late George Letchworth English, a good understanding of its aim may be had from the following excerpt from the preface of that volume:

"The aim of this book is to introduce the charming science of mineralogy in the simplest and most interesting manner possible, without sacrificing scientific accuracy. It can be understood readily by a child of fourteen, yet its appeal is equally strong to the adult. No previous knowledge of chemistry, physics, or geometry is assumed, but every effort has been made to present in an alluring manner such facts and theories in these sciences as are essential to the understanding of the mineralogical topics treated."

For over half a century the name of George Letchworth English was a name almost synonymous with minerals. Revision of his book by eminently qualified David Jensen was prompted by the fact that during the two decades since the original publication popular interest in mineral collecting in all its phases has increased until it now ranks third among important U.S. hobbies.

Those familiar with the original work will find the revised edition has been expanded and rearranged in part to make the book as useful as possible to the beginner. New chapters on radioactivity and gem cutting have been added. The chapter on fluorescence has been enlarged and brought up to date. The chapter "How to Collect Minerals" has been expanded and a new one "Specimen Preparation, Storage, and Display" has been added. Part 2 "Description of Minerals" has been completely rearranged. The common rock-forming minerals are listed with reference to the rocks in which they are most apt to occur.

The economic uses of industrial and ore minerals have been presented, with grouping of the minerals according to their elements.

Useful classification tables are given in Part 3 for each of the three main classes, i.e., igneous, sedimentary, and metamorphic. The appendix contains tables for use in the identification of minerals. With their help the average rockhound may be able to identify most of the more common rocks and minerals by himself and no doubt, with a little study, some of the not-so-common specimens.

Before reading this book it is recommended that beginners first secure a set of properly identified rocks and minerals in order that they may get the "feel" of each type as methods of identification are pointed out. Ward's Student Mineral Collection, advertised on page 23, is ideal for this use. More economical sets are available and listed in Ward's New Geology Catalogue No. 583.

\* \* \* \*

**CRYSTAL MOUNTAIN BERYLLIUM:** A new plant to make beryllium hydroxide from beryl will be built by Mineral Concentrates, Inc., on a site at Loveland, Colorado. Beryl from Crystal Mountain area will supply the plant; and mica will be separated from the beryl at the Loveland plant.

\* \* \* \*

**"ROCKHOUNDS COME TO TOWN."** We are indebted to "WE", official publication of the "Hawthorne Plant of the Western Electric Company", for the very appropriate and informative picture series found on the center-spread pages of the current issue of Earth Science. No small number of the more than 420 members of ESCONI, (Earth Science Club of Northern Illinois), who were the most generous and gracious hosts for the 18th Annual Convention of the Midwest Federation, are employed by Western Electric, and many other of the important major industries of the west Chicago suburban area. These industries are always very willing to give special recognition to such worthy efforts of their employees.



## MIDWEST CLUB NEWS

**Bernice Rexin, Club Editor**

3934 N. Sherman Blvd.  
Milwaukee 16, Wisconsin

**ST. LOUIS MINERAL AND GEM SOCIETY** visited the Pere Marquette State Park on Sept. 14 to collect fresh water pearls. On Oct. 18 and 19 the club was scheduled to make an over-night trip to Rolla, Missouri, to collect specimens of hematite, limonite, quartz, pyrite, marcasite, ripple-marked sandstone, and goethite from the lead mining district. Presently the club is making plans for classes on mineralogy, geology and related subjects.

**MADISON GEOLOGICAL SOCIETY** on November 3 will hear Dr. George P. Wooldard, of the University of Wisconsin's Geophysics Department, speak on "Some of the Results of the International Geophysical Year Measurements in the Antarctic Ice Sheet." For nearly ten years, Dr. Wooldard, who is chairman of the gravity program of the U. S. IGY Committee, has been making a study of determining the characteristics of the world through gravity and seismic measurements made on earth. Visitors are cordially invited to attend this meeting.

**MINNESOTA MINERAL CLUB** on Sept. 14 made a successful hunt for Lake Superior Agates in a gravel pit near Osseo, Minn. The group reports that every year more mines are closed to the public. This is due to the fact that mine owners have often had to pay damages when visitors were injured or killed while on their property. Courts do not always accept waivers signed by the injured prior to his visit. Rockhounds can slow down this trend by heeding safety rules and being considerate when they visit a mine.

**CENTRAL ILLINOIS ROCKHOUNDS** on Oct. 12 were given a demonstration and talk on "Faceting," by Everett Jones. On Oct. 18 the society made a visit to Nashville, Ill., to see an oil field and to collect fossils from a limestone quarry.

**INDIANA GEOLOGY AND GEM SOCIETY** reports that two of its members, after seven attempts, located a long abandoned quarry near Bloomington, Indiana. The discoverers, Bob Woods and Frank Sanders, report that it contains an abundance of tiny fossils which have weathered out. Among other fossils, they collected a half-dozen perfect blastoid heads. They state that the fossil hunter need only find a bare spot in the quarry, sit down and start picking up fossils. Access to the mine is over private property and through dense underbrush; it is almost completely hidden by a bushy forest that has grown up in the 75 or more years since the quarry was abandoned.

**KALAMAZOO GEOLOGICAL AND MINERAL SOCIETY** heard Dave Garske, a student at Houghton Tech., discuss "Keweenaw Peninsula Minerals." He stated that copper was first discovered on the Peninsula in 1884. A good place to collect calcite, tourmaline, rhodenite, magnetite and garnets is on the mine dumps of the Beacon Mines in Champion and near Michigamme, Michigan.

**CINCINNATI MINERAL SOCIETY** on Sept. 24, heard one of its charter members, Charles Gschwind, discuss in detail the geology of the Big Bend National Park in Texas. The talk, which was based on a personal study by Mr. Gschwind, was well illustrated with maps and colored slides. Some of the areas explored had been previously seen by only a few men.

Dr. William Jenks, head of the Department of Geology and Geography, University of Cincinnati, was scheduled to speak on "Geochemical Prospecting," at the society's Oct. 19th meeting. The group meets on the last Wednesday of each month at 8 p.m., in the Ohio Mechanical Institute. Visitors are welcome.

**MICHIGAN MINERALOGICAL SOCIETY** at its September meeting heard Charles Markert, of the Ishpeming Rock and Mineral Club, give an outstanding talk on "Collecting in the Marquette Iron Range." This area will be the site of the Midwest Federation's 1960 Field Trip Convention, to which the Ishpeming Rock and Mineral Club will be host.

MMS reports that Mr. Miller, of Pugh Quarry, has had to employ extra drill rigs in the quarry because, four times this summer, visitors have dropped material into blast holes. **OZARK MOUNTAIN GEM AND MINERAL SOCIETY** gave Margaret Gibson a farewell party on August 10. Miss Gibson, who was one of the founders and the first president of the society, is moving from Springfield, Mo. The club presented Miss Gibson a beautiful lapel pin which was made by its members. The pin consisted of a small jade gavel suspended from a silver bar on which was inscribed: First President, OMG&MS. 1957-1958. In addition the group gave her a small treasure chest filled to overflowing with silver coins, baroque, crystals, cabochons, faceted gems, and jewelry. **ISHPEMING ROCK AND MINERAL CLUB** recently made a field trip to the Keweenaw Peninsula. Its members collected some nice copper and prehnite specimens at the Irquois mine and then moved on to the Delaware mine where they found a few good pieces of datolite. Next day at Five Mile Point they found agates and thomsonites, but they were not abundant.

The society is already making plans for the 1960 Midwest Federation Convention. They have made arrangements for convention visitors

to visit several mines in the area. Mining companies about Ishpeming require all collectors who are working on the dumps to wear safety glasses. Those who wear glasses, may purchase clip-on safety glasses. These are light weight, but effective.

**MIAMI VALLEY MINERAL AND GEM CLUB** announces that Mrs. Forrest Shumaker will conduct a class on "Gemstones" at the Dayton YWCA this fall. The course will consist of eight two-hour lessons, covering the study of gemstones and lapidary. Mrs. Shumaker is a member of MVM&GC.

The society reports that farmers in the vicinity of Flint Ridge are becoming justifiably hostile to rock hounds. Recently a club group (not MVM&GC) milked a farmer's cows and picked his strawberries! The club is wondering if after this outrage they will be able to arrange a Flint Ridge field trip for the convention.

**EARTH SCIENCE CLUB OF NORTHERN ILLINOIS** has four well organized junior groups which meet separately once a month. Each group is under adult leadership. ES-CON'S Downers Grove group of juniors is learning about igneous rocks and fossils this fall. Its Riverside Juniors are beginning a course in the Earth Sciences. A ten-lesson course in silver work has just been completed by its Brookfield Juniors; and its Berwyn Juniors recently viewed Howard Knight's color movies of Alaska.

*Hiawatha Gem and Mineral Club* recently visited Cowles Lakes (25 miles west of Omaha, Nebr.) to view the collection of Mr. and Mrs. Harry Cowles. In Mr. Cowles' front yard is a huge, hollow petrified log. He has a spacious room devoted to his hobby. His cabochons, minerals, fossils and Indian artifacts are displayed in well lighted wall cabinets and one window is covered with 'transparencies'. He uses a separate dark room for his fluorescent materials. His collection is superior to many public collections. On the way home the group stopped at Queen Hill Quarry where they found some prize horn corals which will cut and polish.

## OTHER SOCIETIES

*El Paso Mineral and Gem Society* made a very successful field trip to the Springerville-St. John's area over the Fourth of July weekend. No digging was necessary to secure the lovely agatized and jasperized wood or the many colored seam agate which abounds in the area. Ancient Indians had once camped where they camped, and around the lake near the camp the party found numerous arrow points, scrapers, and shards of decorated pottery.

**MINERALOGICAL SOCIETY OF PENNSYLVANIA** was the guest of the Bethlehem Steel Company at the Cornwall Iron Mines on Sept. 14. The Cornwall ore deposits were first mined for iron in 1740 and during the American Revolution the mines supplied ore for the charcoal furnaces which made cannon and ammunition for George Washington's Continental Army. Its ore body has been mined continuously since 1792. It is reported that 150 minerals, including gold and silver, have been found in the pit. Those most commonly found are magnetite, hematite, covellite, chalcopyrite, andradite garnets, pyrite and tremolite. Members of MSOP were allowed to collect on the dumps.

**COMPTON GEM AND MINERAL CLUB** plans to hear Mrs. Dorothy Craig give an illustrated talk on "Mexico," on December 4. Mrs. Craig, a past president of the California Federation, will illustrate the talk with specimens from her own collection. Visitors are invited.

**MIAMI MINERAL AND GEM SOCIETY** has won the Eastern Federation's Wise Trophy for the second time. If it wins it a third time it will get to keep it. This trophy is awarded by the Eastern Federation each year to the society having the largest percentage of its members participating in club displays at the Eastern Federations Convention and Show. Miami Mineral and Gem Society had a membership participation of 94% and the Baltimore Gem Cutters Guild was runnerup with 93% of its members contributing to its club display.

*Gem Cutters Guild of Baltimore* reports that the Goose Creek area near Outlands, Virginia will soon be covered by water as part of a state project. The club has made tentative plans to visit this area on August 24. Pastel marbles, some serpentine and nice quality garnets have been found at this site.

## Recommended Readings

"Pearl," by Margaret Howard, July-August issue of the *Sooner Rockologist*. Romantic legends and scientific facts are combined to make this a very interesting and educational article on pearls.

"A Pronouncing Vocabulary," Anonymous, June issue of *The Pick and Dop Stick*. This list contains more than 200 phonetic pronunciations of mineral names.

---

COVER PHOTO: We are indebted to Bob Rindell of Downers Grove for reproducing this beautiful snow crystal picture.

# "MOHAWK VALLEY HERKIMER DIAMONDS"

FREE 15 HERKIMER 1/8" to 1" BEAUTIFUL CRYSTALS ON A \$25 ORDER

1—1 pkt. of sand with over 15 tiny Herkimer Diamonds and 5 faceted stones.....	\$ 5.00
2—1 oz. India garnets, moonstone, tourmaline, amethyst, turquoise, and opal.....	\$ 8.00
3—1 oz. India sunstone, 3 fine pcs. of iolite, tigereye, jadeite, opal from Australia, faceted zircon, amethyst heart, and 3 faceted B. quartz stones.....	\$10.00
4—India rough star ruby, sapphire, aquamarine, chrysoberyl, Australian opal.....	\$12.00
5—India faceted ruby, tourmaline, aquamarine, amethyst, golden topaz, with cabachon garnet, opal, moonstone, turquoise and 1 35 M.M. Brazilian quartz stone.....	\$25.00
Pkg. No. 234—\$25.00	Pkg. No. 12345—\$50.00

50% down will deliver any order on approval.

Free—A traveling car companion for your car on any order; yours to keep.

Plus—A 10% Discount A Christmas Special Bonus Offer.

All orders guaranteed to satisfy or money gladly refunded. Postage extra.

Anyone buying one of my songs now on sale will get an extra 10% discount.

"Lovers Paradise" or "God's Christmas"

## ANDY M. PATAPOW

*The "Solvay Dreamer"*

202 ABELL AVE.

SOLVAY 9, N. Y.

### EQUIPMENT

4" Allen Junior Gem Cutter—complete combination unit.....	\$49.50
6" Allen Combination Unit with 8" saw and blade.....	98.00
4" Allen Faceteer's saw with thin copper blade.....	24.00
4" Allen Faceteer's saw with standard 4" blade.....	25.00
Allen DeLux Facet Head.....	78.50

### BOOKS

The Art of Gem Cutting—by Dake.....	2.00
Getting Acquainted with Minerals—by English.....	5.00
Jewelry and Enameling—by Greta Pack.....	4.00
Uranium Prospector's Handbook—by Peck.....	1.00
Uranium—Where It Is and How to Find It—by Proctor.....	2.50

### TOOLS

Jeweler's Needle Files, set of 6 assorted.....	2.50
Jeweler's Needle Files, set of 12 assorted.....	3.95
4 1/2" Flat Nose Pliers.....	1.50
4 1/2" Chain Nose Pliers.....	1.50
4 1/2" Round Nose Pliers.....	1.50

### JEWELRY FINDINGS

No. 8 Sterling Silver Baroque Caps.....	1 doz.....	1.30
No. 7 Sterling Silver Baroque Caps.....	1 doz.....	1.10
18" Sterling Silver Neckchain with Clasp.....		.40
No. 304/13 Gold Plated Cuff Link Backs for cementing.....	12 prs.....	2.65
Tie Tacks—Gold-plated—with pad for cementing.....	12 for.....	2.00

Add 10% Excise Tax to Findings.

Add 3% sales tax if you live in California.

Add 4% Sales Tax if you live in Los Angeles. All prices F.O.B. Los Angeles.

We are a member of the Gems & Minerals Association—Write for catalogue, Price .25, Dept. E.

## ALLEN LAPIDARY EQUIPMENT COMPANY

3632 W. Slauson Avenue

Phone Ax-2-6206

Los Angeles 42, California



# Earth Science

DECEMBER, 1958

Vol. 11, No. 6

## Volunteers for the Rock Pile\*

by NANCY GIBBONS ZOOK

Photos by DONALD S. ZOOK

THE meeting came to order at the bottom of the rock pile at the Bellevue Sand and Gravel plant.

Greetings were finished and guests had been informally introduced as the members turned to the agenda: agates. While the gathering was as enthusiastic as it was diversified, Roberts' Rules would have been as out of place as a horse at a modern day plowing match; it was every man for himself.

\*Republished by courtesy of THE IOWAN Magazine.

Youngsters from first grade through high school searched happily beside farmers, homemakers, factory workers, professional people, and a retired couple well past sixty. Those with sharp eyes and enough patience successfully completed the day's program. Among the thousands of small stones in the pile, they hunted out the elusive agates which were brought by glaciers from the Great Lakes region.

In the search, differences in age and occupation were quickly forgotten as these members of the Cedar Valley Rocks and



The family dog, Lucy, joins Mrs. Ralph Chadek and Christine. View of the open gravel pit at Bellevue.

Minerals Society shared a common enthusiasm for tracking down secrets of the earth. Veteran members helped neophytes identify their finds and explained something of their origin.

For example, the agates the group was primarily interested in finding were formed by water seeping through ancient volcanic rocks which left layers of silica in cracks and lava bubble holes. These layers are the wavy, irregular stripes which identify agate. Ranging in color from white to grey, green, orange, red, and brown, agate's stripes and clouds may form pictures of birds, fish, flowers or other designs. These myriad patterns have inspired names like banded, ring, eye, fortification, rainbow, thunderegg, plume, tree, and moss agates.

There are a number of uses for this translucent variety of quartz, not including the marbles used by small boys which are usually glass imitations. Cut and polished, the glowing beauty of agates makes them adaptable for jewelry, or they may be simply mounted on collection boards. Agate is also used for knife-edges of delicate balances, small mortars and pestles for chemical work, umbrella handles, burnishers and writing styles, paper-knives, and seals.

Why are they rock-hounds? Their answers vary. "It's fun . . . I like rocks . . . they're pretty." Mr. and Mrs. F. Klotz, farmers for Winthrop, like agates so well that in the past twenty-five years they have built up a collection worth hundreds of dollars. Former club president H. W. Bockhaus claims that rock collecting is the ideal hobby for any retired person like himself. Charter member W. E. Wilson explains his half century of collecting, "It's like the measles—it's contagious. I love to roam the hills and mountains studying geology."

Young people often become interested through picking up rocks on vacations or fishing trips and bringing them to the club meetings for identification.

Student Jim Drahovzal admits his rock-collecting hobby has taught him a lot about prehistoric times in Iowa, and Ken Wright has earned an extra credit in science for his work with fossils. Many club members are particularly fascinated by fossils.

Mrs. Michael Camizzi and Earl Heath have found rare trilobites, small marine animals from the Devonian period about 400 million years ago. Mrs. Camizzi also displays a crinoid calyx, gastropods, and spirifers. Her husband has a gastrolith which he explains as a gizzard stone from a dinosaur.

The membership requirement for the rock society is simple: an interest in rocks, minerals, geology, paleontology, or any related field, plus yearly dues of one dollar for an adult rock-hound, fifty cents for a junior member. If a husband joins, his wife is admitted free, or vice versa. The wives are as enthusiastic as their husbands, and the children are no less interested than their parents.

About half of the club's members are especially interested in the processing of the stones. Mr. and Mrs. Fred Stark use the tumbling method—sometimes 300 to 600 hours are necessary to give the desired smoothness and polish. Other members cut and polish their stones with equipment ranging from a homemade variety, costing about \$30, to commercial equipment which may run into thousands of dollars.

First, the rock is sliced with a diamond-bladed saw into "slabs." A special pencil is used to outline the desired shape on the "slab," which is then cut into smaller pieces. Each piece is mounted on a "dop" stick about the size of a short pencil. Holding the "dop" stick, the lapidary can carefully rotate the stone under running water while the grinding wheel shapes it.

Next the stone is sanded by revolving discs of various grits until a semi-polish is obtained, and finally it is given a high polish with buffing wheels. The entire process may take several hours.



Morning's finds are displayed at lunch at Bellevue State Park. The "Roundup" hour is always greatly enjoyed by all.

Farmer V. L. Pemberton of West Branch likes to cut and polish—his wife enjoys mounting the stones in buttons, cuff-links, earrings, and other jewelry. Piano tuner C. P. Mason of Central City prefers cabochon work in which he polishes the stones but doesn't facet them.

The Camizzis of Cedar Rapids also enjoy processing and mounting their rocks. Mr. Camizzi smiles as he says, "Some days I may feel like an old fossil but I forget about it when I go down in our basement and work with the rocks. They keep me alert and learning all the time, and I never tire of their vibrant beauty."

About ten years ago, he helped organize the Cedar Valley Rocks and Minerals Society which is now under the sponsorship of Dr. Karl Goellner, biologist at Coe College. Meetings are held in the college's Science Hall, the third Wednesday of each month from September to May. Programs may feature a Chinese auction where members bid silently for each other's rocks, "Brag Night," movies or color slides of vacation spots where interesting specimens have been found, and talks by such experts as pediatrician H. R. Jenkin-

son of Iowa City, a club member well known for his gem-faceting skill, or Fred H. Dorheim of the Iowa Geological Survey.

On pleasant weekends, club members go on field trips together or hunt individually in old quarries, along gravel creek beds and rivers—wherever the glacial drifts and alluvial deposits may reveal agates, geodes, jaspers, fossils, petrified wood, or other specimens prevalent in Iowa.

These expeditions are always leisurely, providing the special pleasures of quiet walks in out-of-the-way places, discoveries under foot of rare beauty or intriguing clues to the mysterious earth movements of long ago. What better reason for a rendezvous with rocks?

---

"Pretty, in amber to observe the forms of hairs, or straws, or dirt, or grubs, or worms!

The things, we know, are neither rich nor rare,

But wonder how the devil they got there."

Pope

# THOMSONITE

## The Dainty Gemstone

By

J. DANIEL WILLEMS

THOMSONITE is a gemstone with individuality. There is not another quite like it. Confusing it with anything else would be extremely unlikely. Thomsonite has a character—or rather characteristics, all its own.

The surface texture of polished thomsonite is decidedly attractive. It is reminiscent of high grade porcelain. Porcelain is "a high quality substance of superior whiteness, hardness, and sonority (resonance)". So the dictionary says. It is smooth and mirror-bright when diligently polished. It has slickness. It feels elegant to the touch of the fingertips, just as fine porcelain feels to the lips. That goes well with the connoisseur. And thomsonite has another quality that is appealing, it is dainty.

The surface markings of thomsonite are distinctive. They seem to sink into the stone, into the inner parts, especially if the gem is well polished. The markings definitely give the impression that the material is perceptibly translucent, at least in the immediate subsurface regions. The markings consist usually of concentric bands of color, or figures like sunbursts, or "eye" markings. There may be a central mass of dark color, surrounded by radially arranged silky fibres. There may be alternating stripes of dark and light. The colors most commonly range from milky white to black, with red, yellow, pink, and flesh-tones; and in the variety called limonite, green predominates. Some stones are attractively mottled. There often are several centers of such structure arranged in a single pebble, forming a unique and pleasing pattern. All these markings are overlaid with a vitreous, pearly lustre when fully polished, which gives the gem

unequalled, delicate beauty.

The chemical composition of thomsonite is  $2(\text{Ca}, \text{Na}_2) \text{Al}_2 (\text{SiO}_4)_2 \cdot 5\text{H}_2\text{O}$ , a hydrated calcium sodium aluminum silicate. Its hardness on the Mohs scale is  $5\frac{1}{2}$ . The specific gravity is 2.3. The refractive index is 1.51. Thomsonite is bi-axial and optically positive. It belongs to the orthorhombic system of crystallization, and its birefringence is 0.03. There you have its scientific pedigree. (I'm sure you have been anxiously anticipating this scientific paragraph.)

Thomsonite is found in one region in America only. I have no information that it occurs anywhere else. There is one area along the north shore of Lake Superior, and another on Isle Royale, an island in the Lake not far from the Canadian shore.



Lake Superior Thomsonite nodules free and in matrix.—Photo by Willems.

Here it occurs in the form of nodules, or pebbles, which are imbedded in extremely solid volcanic rock. The nodules vary considerably in size. A 1-inch nodule is a large one, and the average is more like a half inch. The nodules are rough looking, but easily recognized. They are usually amygdaloidal (isn't it a pretty word) in shape; which means almond-like. The nodules are held exceedingly tightly in the rock and it is next to impossible to remove them without shattering them. With a chisel and heavy hammer it also takes a strong arm, protective goggles and strong gloves. Do not try it if you can get them the easier way. This is by finding a region where the basic rock is exposed to weathering, usually along the shore of the lake. Here the rock gradually decays and the pebbles come into view, eventually they may even be released and can then be found lying in the gravel on the beach. The common trouble is that some other rockhound has been there before, and has not left them lying there. Finally the pebbles may also undergo decay and when opened they are found to contain a dark disintegrated mass, of no resemblance to the beautiful stone it once was.

Every rockhound's collection in our Midwest regions would be materially enhanced by a small handful of thomsonites, some rough, and some cut and polished. They are not so abundant that one can always get them from either a dealer or a local collector. The people who live along the collecting regions are very apt to gather them as soon as spring weather disintegrates the ice. Many of those people have prize collections, and also have extra material. The prices have gone up, but good nodules can usually be bought from reliable local sources. It has happened, however, that buyers have paid high prices for nodules which were well advanced in the decaying process, which cannot always be detected before removing the "skin." On the inside such a nodule is worthless and falls apart in the process of cutting.

Cutting and polishing thomsonites are delicate operations. Thomsonite is a temperamental stone. Fairly hard, and very brittle, and probably also burdened with internal stresses held captive since its volcanic days, a thomsonite may burst when the outer skin is removed. This is especially true when the cutter removes a large percentage of the original nodule. Ordinarily when handling materials of the quartz family, for instance, it is possible to cut a cabochon from a nodule and come through with a gem representing about 66%, or even more, of the original. In cutting thomsonite the cutter should endeavor to keep intact all the material that it is possible to retain. The more he cuts away, the more likely it is that the stone will be broken, or even completely shattered. When, for instance, two or more sunburst markings appear in a fine nodule of good size, and when these different figures lie at different levels in the stone, and are inclined at different planes to each other, the material in the spaces between and surrounding the sunbursts is often not strong and compact enough to hold the parts together. In such a stone a little sloppy grinding, or a few jolts here and there on a rough wheel can mean complete ruination of a fine specimen.

The method of cutting I use now is the result of considerable experimentation, and the loss of considerable good material. I think I now have a method which saves many stones, although it is true that the end result yields less than 66% in many cases. Here is how I do it; pick out a nodule and examine it carefully to find a spot where a good design might appear when the skin is removed. This I take to a sanding wheel, with a cloth of 220, dry, or better even 300 grit. Then carefully and gently I touch the selected spot of the nodule to the wheel and sand away a small area. I touch the material to the wheel for only a moment, then let it rest and cool, then touch again, and all the time I keep turning the stone this way and that. It takes patience, and many short touches or





Display of choice Thomsonite cabochons cut and polished by Author.—Photo by Willems.

swipes. When the skin is off and no good figure appears I select another spot, and so on until I find the area where a good sunburst appears. Often in this way it will happen that the entire nodule has become completely sanded all over its entire surface. Then the best spot can be selected as the top of the curve of the completed cabochon. With this high point for a guide I keep sanding down the stone gradually and carefully, shaping that portion which is going to be the upper half of the cabochon. The lower half, that part below the girdle, I leave more or less in its present condition, rather rough and unshaped. After the top is all completed and polished this part is removed by holding the stone steadily against a horizontal diamond lap. If and when all this is successful, there results a nice, smoothly polished cabochon; a matter of a little pride.

From the foregoing you can see that all the "cutting" is done by the sanding cloth. From the first cloth, which can be new and

sharp, the stone is taken to an old and well-worn sanding cloth which will give it smoothness.

After that, I finish polishing on a hard felt wheel, using tin oxide. Almost any favorite powder will do. The lower half of the stone, that which is to be removed, has been left intact until all the operations on the upper half are completed. Usually I undop the gem and lay it away for days or even weeks with the rough part still there. I may be a bit overcautious, but it seems to me that, by doing this the internal stresses of the material will to some extent dissipate themselves. The last operation is the removal of that useless lower half, which is done on the diamond wheel where a smooth and even process of abrading under minimum pressure is not likely to damage the delicate and brittle gem. Use plenty of water and handle very gently.

Often the surface of the nodule is not an even surface but has high and low areas. It is then often well to follow these curves, leaving the gem sort of natural in shape rather than with perfect curves over the top and around the girdle. It does not have to be perfect in outline, especially when thereby the design and color patterns are better in an uneven surface. And do not overcut. The sunburst ring has areas which change the width of the ring. Cutting too far, the figures suddenly come to an end and the pattern is lost. Use judgment and stop when the figure is good enough.

When the stone is finished, do something with it. Endow it with a beautiful gold mounting, or put it into a display case, or a frame, such as is shown in the illustration. In other words, put it on parade. It is well worth it. You will see very few in or on other hands, and everyone will admire it.

Yes, a thomsonite is a thing of beauty, a dainty thing with a peculiarly delicate charm. It is good in any kind of jewelry. Every gem collector should have one or more.

# Uranium Occurrence In New Mexico\*

by T. O. EVANS

THE next district to be given a hasty review is within the limits of the Laguna Indian Reservation where the famous Jackpile Mine of the Anaconda Company—located 45 miles east of Grants, was discovered in November, 1951, by aerial reconnaissance, employing scintillation equipment.

Subsequently the deposit was proven by an extensive drilling program which has demonstrated it to contain the largest tonnage of uranium ore thus far developed in our country.

The initial exploratory drilling revealed two ore horizons of enormous extent in the Westwater member of the Morrison formation, and subsequent drilling has continued to expand the ore body to the north, consequently the ultimate size of this occurrence is not presently known.

In considering whether or not it was more advantageous to sink shafts or remove some 125 feet of overburden overlying the deposit to recover the ore, the Anaconda management decided upon stripping. It was their opinion—which coincided with ours, that approximately 20% more ore could be recovered by open pit operations.

A contract to strip part of the area was given to the Isbel Construction Company and the Anaconda Company removed the balance. To date, approximately 25 million tons of material, most of which requires blasting, has been stripped.

The Anaconda employs six power shovels, ranging in dipper capacity from 1½ to 6 cu. yds. In addition, 27 twenty-two ton Euclid trucks are used for the transportation of ore and stripped material. The labor force totals about 200 men.

The mined ore is removed by trucks

\*(Continued from issue of April, 1958)

to the crushing plant located on a standard gauge railroad spur track. After crushing the ore, it is loaded into 70 ton gondola cars for shipment to the Anaconda processing plant at Bluewater, which is about 50 miles from the mine. The spur track built by the Anaconda Company from the main line of the Santa Fe to their Jackpile mine is about 5 miles in length.

I have previously mentioned that the Anaconda Company operates a limestone unit capable of processing 500 tons of limestone ore. This plant was put into operation on October 1, 1953.

Following the development of the Jackpile mine, the Anaconda built an additional mill to process their sandstone ores. This mill was placed in operation in January, 1956. The mill employs a resin in pulp circuit, using ion exchange to recover the concentrates.

The sandstone mill processes 2500 tons of ore per day and their carbonate leach plant 500 tons. About 300 men are employed in both plants.

North of the Jackpile mine, the Saint Anthony Uranium Corporation, a subsidiary of Climax Molybdenum Corporation, have completed a shaft on the Seboyeta Grant and the first shipment of ore was made about 3 months ago.

The frequently mentioned Ambrosia Lake district where uranium was discovered in April, 1955, will be mentioned next.

The Ambrosia Lake area lies about 6 miles north of the Haystack and Poison Canyon properties. The district embraces about 75 square miles and more than 25 deposits of varying size have been proven. Many of them contain ore reserves in excess of five million tons.

(Continued on page 18)



Exhibits by individuals, 53 midwest member societies, and commercial companies filled more than 25,000 square feet of floor space.



Spectator Mr. Mark Alderman brought son and wife to see exhibits in Downers Grove High School.

## ROCK HOUNDS CO

### WERE YOU THERE?

They came 10,000 strong to attend the "Midwest Convention" held in Downers Grove (Ill.) High School in June. From 20 States as far west as California and from the Eastern Seaboard they poured into town. Every single one of them felt well repaid for coming, and we hope you will start planning now to attend next year's Convention. It will be an experience you will never forget.



### INDIVIDUAL SOCIETIES EXH



"Hot Glass" was shown by Montgomery's "Doc" Hoff with Geiger counter. Glass tinted by uranium glows when under "black" light.



Messrs. Roy Beghtol, Carl Hoffman, Emerson Pugh, Mark Melancon read the convention headlines.



Ribbons for winners are bestowed with help of Mr. Harry Witmer (right), who helped set up exhibits.



For Sale. Commercial exhibits did a brisk business in mineral specimens, polished stones, and implements for rock hunting expeditions.

## DS COME TO TOWN



SOCIETIES EXHIBITED POSTERS

### WILL YOU BE THERE?

Dear Editor: 1959 Convention News! Our Club, The Miami Valley Mineral and Gem Club, Inc. of Fairborn Ohio, is happy to announce we will be host to the 1959 convention of Midwest Federation of Mineralogical and Geological Societies.

The convention will be held June 18-19-20-21 at Springfield Ohio. We have procured the use of the Clarke County Fair Grounds, at Springfield, which has excellent facilities to meet all the requirements of our Midwest Convention.

Very truly yours,

Howard Core, Publicity Chairman.



Fossil of prehistoric fern tree, said to be 250 million years old, is among prize possessions of Bill Allaway, with Frank Fleener.



"Pebble Pups" is tag given to junior members, who got into exhibits free. Eight is minimum age for membership in most of the clubs.

*(Continued from page 15)*

There are 22 companies interested in the Ambrosia Lake district. Among the major companies are the Kerr-McGee Oil Industries, Inc., Homestake Mining Company, Vanadium Corporation of America, Phillips Petroleum, Holly Uranium, Rio de Oro, affiliated with the Atlas Corporation, and Climax Uranium Corporation, a subsidiary of Climax Molybdenum Corporation.

Something over a year ago, the Rio de Oro Company sunk a shaft and bottomed it at 350 feet. This company was the first to commence ore shipments and has been doing so for about a year. An additional shaft has been collared and sinking is underway.

The Holly Uranium Company are also producing ore from their shaft in Section 14, T14N, R10W.

The Kerr-McGee Company have completed one shaft from which they are producing ore. They are sinking another, and one additional shaft has been collared in preparation for sinking.

The Homestake Mining Company has completed one shaft and two others are collared.

In addition, the Phillips Petroleum Company and Vanadium Corporation of America are presently sinking shafts.

As of this date, there are twelve shafts in the district. All of them are either 3 or 4 compartment shafts. Shaft dimensions vary between 6 by 13 feet for 3 compartments, to 11 by 14 feet for the 4 compartment types.

About 500 gallons of water per minute has been encountered in the shaft sinking operations, when the water table is penetrated at about 400 feet depth in the shafts located in the southern part of the Ambrosia Lake area.

The ore horizon in the district, with one exception, is between 600 and 800 feet below the surface, and as in other parts of the Grants and Laguna Districts, it occurs in the Westwater sandstone of

the Morrison formation. In some instances, four different ore horizons have been discovered during drilling operations. The ore varies in thickness from six feet to as much as eighty feet.

The Kerr-McGee Oil Industries are planning the erection of a mill on Section 31, T14N, R9W, near Ambrosia Lake. This mill will have a milling capacity of 3500 tons per day.

The Homestake-New Mexico Partners are presently building a mill near the San Mateo Road approximately 5 miles north of U.S. Highway 66. This mill will process 750 tons per day and the completion date is January 1st of next year.

Immediately adjacent to the last mentioned mill, the Homestake-Sapin Partners have acquired a mill site immediately north of the Homestake-Partners Mill. The erection of a 1500 ton mill on this site was recently commenced and the plan is to have it in production about the middle of next year.

The Phillips Petroleum Corporation recently received a permit from the AEC for the construction of a mill in the Ambrosia Lake area. This mill will have a daily capacity of 1750 tons. A contract for the construction has been awarded to the Western Knapp Company of San Francisco.

In addition to the Anaconda Mills now processing 3000 tons of ore, there will be four more mills in the Grants-Ambrosia Lake Districts. The combined tonnage to be processed in these districts will amount to 10,500 tons per day, or about  $3\frac{3}{4}$  million tons per year.

You have doubtless read the recent reports of the Atomic Energy Commission in which they indicate that approximately 70% of the total known uranium reserves in the United States are located in the Grants District of New Mexico.

The Santa Fe Railroad Company's reserves at Haystack and Poison Canyon are insignificant when compared to the total tonnage; however, some of our

*(Concluded on page 20)*



### DIAMOND SAW

100% Concentration  
Phosphor-Bronze 60-80 Mesh  
4¾" Diameter—0.012" Thick  
Hole Size ½" and ⅝"

**\$7.50 Each**

Quantity Limited  
No COD Shipments

**EDWIN J. GOODWIN**

Box 7711-E

Houston 7, Texas

### Fine Mineral Specimens

Specializing in crystallized and rare minerals for the advanced collector and the school.



**JOHN S. ALBANESE**

P. O. Box 221

Union, N.J.

## ATTENTION ROCKHOUNDS

Why not acquire some authentic information as a basis for more complete knowledge of the many phases of Rock and Mineral Identification through a HOME STUDY COURSE?

Excellent text, collection of Rocks and Minerals, and personal guidance and consultation with each course.

---

### MINERAL SCIENCE INSTITUTE

Desk 5

159 East Ontario St.,

Chicago 11, Ill.

Gentlemen: Please send me free copy of your brochure on "Mineral Identification."

Name.....

Street & No.....

City & State.....

**The Most Comprehensive Geological Supply Catalogue**  
ever published. Gives standard prices for all materials.

**A MUST FOR EVERY MINERAL COLLECTOR**  
and person interested in the Lapidary Art.

Price—\$1.00. This will be credited for any purchase over \$10.00.

### ECKERT MINERAL RESEARCH

110 East Main Street

Florence, Colorado

(Continued from page 18)

lessees have developed substantial tonnages and we derive considerable satisfaction from their success.

It is reported that 125 million dollars has or will be spent in the Grants-Laguna and Ambrosia Lake Districts. This statement explains much better than I can, how important these areas are to the economic welfare of our nation and to the State of New Mexico.

Please permit me to add that I am grateful, and particularly proud of the action taken by the Sante Fe management in authorizing the expenditure of substantial sums of money to pioneer the exploration of uranium deposits in the Grants District.

**DIRECTORY:** A new Directory of the Rocky Mountain Federation of Mineralogical Societies is now available for distribution to member societies and others who may be interested. The Directory will list by states the names and locations of each of the 53 affiliated clubs; and will also give the name and address of both the President and Secretary of each society; and, where possible, will list the time and place of meetings. Two copies of the Directory will be furnished free to each affiliated club; additional copies may be purchased by members of the Federation through the Secretary of any affiliated club for 50c each; the price to other than Federation members is \$1.00 each, post paid. A limited supply only is available. Write Domer L. Howard, P.O. Box 2397, Oklahoma City, Okla.

**ARE YOU LOOKING FOR A JOB:** Geologists are needed in the Geological Survey of the Department of the Interior and in various other agencies, the United States Civil Service Commission announces. Positions will be filled in Washington, D. C., and throughout the United States at entrance salaries of 4,490 and \$5,430 a year.

Applicants must have had appropriate education or a combination of education and experience, and must pass a written test.

Full information regarding the requirements and how to apply may be obtained at many post offices throughout the United States, or from the U. S. Civil Service Commission, Washington 25, D. C. Applications must be received by the Board of U. S. Civil Service Examiners, Geological Survey, Department of the Interior, Washington 25, D. C., not later than December 2, 1958.

STEWART'S

## IDAHO Gem Materials NEW GEM SLABS

For your jewelry and cab collections; \$1.00 deposit to cover mailing costs, deductible on purchase of material. The best of Idaho and E. Oregon AGATES, JASPER & PET. WOODS, plus Mexican slabs of Psilomelane, Orbicular Opalite, Blk. Plume, Bird of Paradise, Nodules, etc. "SELECT THE BEST, RETURN THE REST" with your remittance.

### WE SELL

**CARBORUNDUM PRODUCTS**—Grinding wheels that come balanced, therefore vibration is less and wear is more uniform. They definitely are the best on the market! And cost no more. **JEWELRY MTGS., LAPIDARY SUPPLIES, SAW BLADES & EQUIPMENT.** We may not be the largest but we're pitching!



STEWART'S  
GEM SHOP

2620 IDAHO ST.

BOISE, IDAHO

### "THIS ONE THING I DO"

#### Remind you of the suitability of GOLD AND PLATINUM NUGGETS

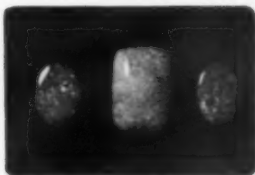
For gifts, and to enhance your own pleasure and treasures. All collectors from teenagers, and other beginners, to that Friend with the splendid Collection will value and cherish Nature fashioned Nuggets; each with its own individuality! Exact weight and definite source given for each specimen. One dollar to ten dollars each, postpaid, for either Gold or Platinum Nuggets; and I mean NUGGETS! See dictionary, please. FRANK H. WASKEY, Oakville, Washington.

THE "ROCKHOUND SPECIAL" BUS MUSEUM will "hit the road" on or about August 1st in Southern California. This exhibit is well known and has been visited by Rockhounds from all over the world.

Its display is never static, as new and better specimens are constantly replacing older ones.

The display also contains a changing group of our World's Largest Collection of Mineral & Geological Kodachromes.

Gene & Eunice Schenet, Owners



**OPAL  
SLIDES**  
**OPAL  
CABOCHONS**

The way to buy Opals is to see them first in beautiful full-color slides. Then make your selection with confidence.

SEND 1.00 for 3 SLIDES, AND LIST OF OVER 125 OPALS TO SELECT FROM.

*Willems* Lock Box 1515  
Chicago 90, Ill.

**FINE QUALITY ROUGH GEM MATERIAL  
and MINERAL SPECIMENS**  
All popular materials plus the Exotic  
GUARANTEED APPROVAL SERVICE

Write at once for new list

**THE VELLOR CO.**

P.O. Box 44, Overland (E5) St. Louis 14, Mo.

**Sand  
Rocks  
Minerals  
Micro-  
Mounts  
Gems**



**\$1.25**  
PLASTIC POCKET  
SHOWCASE  
10 Removable labeled  
Display Boxes  
Collect as you travel  
includes FREE a  
specimen of

Dept. ES, ALASKA our 49th State  
LOR-LEW DESIGN, NORTH HAVEN, CT.

**GEM TUMBLING**

and  
Baroque Jewelry Making  
by the Victors

**NEW THIRD EDITION**  
Just off the press

Demands have quickly exhausted the 48-  
page Second Edition of this detailed  
description of the Authors' own methods  
in current use.

Includes information on - How to build  
a tumbler - Proper belt lengths and  
pulley sizes - Recommended speeds and  
grits for each type of Gem. - Some new  
pointers, not found in the Second Edition.

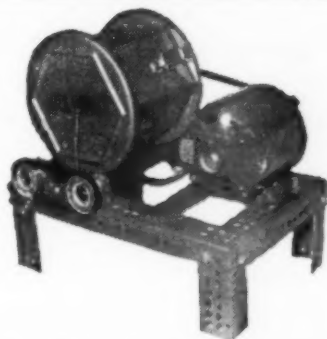
**A MUST FOR EVERY TUMBLER**  
(Experienced as well as beginners)

**\$2.00 - Postpaid**

Anywhere in U. S. or Canada.  
Washington residents add 7c Sales Tax  
Obtain from your local Supply house,  
your dealer, or order from

**VICTOR AGATE SHOP**

1709 South Cedar St. Spokane 41, Wash.



*Look!*

**BOTH ENDS COME OFF!**

**No wonder the new Hillquist  
Tumbler is so easy to clean**

The most exciting design in years; features  
found in no other tumbler. Re-assembling the  
barrel is a snap; just flip the tension catches.

A perfect seal is insured because the ends have full disk gaskets of high density neoprene. The 8" hexagonal barrel, guaranteed for 2 full years, gives perfect results on 5 to 12 pounds of material. And if you want whisper quiet operation a neoprene lined barrel is available for just \$2.50 extra. The rubber covered 5/8" steel shafts are double driven to eliminate drag and wear. The heavy duty frame, made of slotted angle steel, has exceptional rigidity and strength and because it is not welded it may be converted to a two or three barrel unit with ease. The conversion parts are available at small additional cost and extra barrels are reasonably priced.

Send a postcard for your free catalog.

**LAPIDARY EQUIPMENT CO., INC.**

Dept. E-12

1545 West 49th Street

**\$37<sup>50</sup>** Less  
Motor  
neoprene  
lined \$2.50 extra

Seattle 7, Wash.

### WORLD FAMOUS URANIUM SPECIMENS

The last from Ruggle's Mine, Grafton, N. H. Uraninite crystals with Gummite, Autunite, Uranophane, etc. Brilliantly fluorescent; highest radio activity. Specimens  $1\frac{1}{2} \times 1\frac{1}{2}$ ", \$3.00;  $2 \times 2$ ", \$5.00. Choice MUSEUM PIECES,  $3 \times 4 \times 6$ " \$35.00;  $4 \times 5 \times 9$ ", \$90.00;  $5 \times 7 \times 16$ ", \$275.00.

#### MONEY BACK GUARANTEE

\$1.00 brings sample and our catalogue, featuring over 500 selected specimens from all parts of the world.



### WHITE MOUNTAIN MINERAL SHOP

Campton, New Hampshire

### Exquisite Specimen Agates

Polished Whole Louisiana C. I. Colored Agates

These are very lovely cabinet specimens for your collection or a special gift to a rockhound. The first time these very colorful agates have been offered for sale. Selected specimens are \$4.50 each, Postpaid. A very limited number are available. You may return for refund in full if you are not satisfied with your purchase. Gatoin Ivory, Opalized Palm, Florida Agatized Coral.



### KEN KYTE

520 East Boston Street  
Covington, Louisiana

Box 161

## APPLE GREEN WYOMING JADE

Fine Gem Quality—Slabs \$3.00 per square inch (minimum 2 sq. in.)

### ROUGH BRAZILIAN GEMSTONES

*Aquamarine*—Green-blue, faceting & cabochon grade. \$5.50 per 4 ounces

*Amethyst*—Medium-deep purple, faceting & cabochon grade. \$5.50 per 4 ounces

*Morganite*—Peach color, faceting & cabochon grade. \$4.50 per 4 ounces

*Citrine*—Yellow-golden, faceting grade, \$2.00 per ounce

*Chrysoberyl*—Yellow-green, fine faceting grade. \$6.25 per 25 carats

### TASMANIA JASPER

Something new recently imported, interesting patterns from bands to odd tropical wood effect.

One Pound \$1.50

### AFRICAN TIGER-EYE

Natural chunks of golden-yellow color with pleasing chatoyancy for beautiful "eye" cabochons.

One Pound \$1.30

### BEAUTIFUL HERKIMER DIAMONDS

Sparkling brilliant double-terminated quartz crystals from one of the world's most famous localities. Packaged exactly as found in their natural pocket material, ready for sorting, and not highgraded. You can expect to find a large quantity of crystals of all sizes, some of which may contain rare inclusions. Worth many times this price. One Pound Bag—\$3.75

All Prices Postpaid—No Extra Charges—Satisfaction Guaranteed

## MINERALS & GEMS

Box 8072

Albany, New York

### COMPARISON MINERAL SPECIMENS

64 Different 1 in. Specimens only \$6.00 postpaid Send for FREE details on above offer. Plus 64 other 1 in. Specimens, all available at 10 for \$1.

California customers add 4% sales tax.

### MINERALS UNLIMITED

1724 University Avenue, Dept. E.  
Berkeley 3, California

BRUNEAU CANYON High quality gem material

### JASPER

in a beautiful brown with cream colored moons or egg pattern. Takes an excellent polish. Prized for specimens as well as interesting cabochons. Satisfaction guaranteed. Choice \$6.50 per lb.; mine run \$4.50 per lb. F.O.B. Nampa. Price includes FET. Dealers write for wholesale prices.

C. R. KAYE & SONS, Route 2, Nampa, Idaho

### ROCKS AND MINERALS

(A Magazine for Collectors)

If you collect rocks, minerals, sands, pebbles, crystals, ores, gems, ROCKS and MINERALS is your magazine. Founded 1925. Issued once every two months. 112 pages per issue. \$3.00 a year (sample copy 60c.)

### ROCKS and MINERALS

Box 29 — Dept. ES Peekskill, N. Y.

### ALASKA PETRIFIED SEQUOIA

Black and white dots and gold inclusions you can see without a glass

\$2.00 a slab ( $\frac{1}{4}$ " thick)

Airmailed

Approximately 3 square inches  
ALASKA LAPIDARY SERVICE  
Baranof, Alaska

## GETTING ACQUAINTED WITH MINERALS

—by English & Jensen—1958

There is endless pleasure ahead for you with this authoritative book that reveals the wonders, amazing mysteries, and beauties of the mineral world. You learn exactly how to start your mineral collection—there is complete information on equipment, identification, and mineral sources. Descriptions of individual species are arranged alphabetically—a simple natural classification that will enable you to find the facts you want quickly and easily. The section on minerals grouped according to their important elements will appeal to the prospector. There is an expanded section on rocks with classification tables.

362 pages, 355 illustrations.....Price—\$6.95

### WARD'S STUDENT MINERAL COLLECTION.

Explore the fascinating realm of the mineral kingdom with this splendid collection. Thirty-six specimens, each in 1½ x 2" specimen tray, boxed, with valuable information booklet and streak plate.

MC-100 .....Price—\$12.00

### RECORD OF LIFE IN THE ROCKS.

A unique three-way introduction to the study of fossils, through pictures and graphs, a concise text and actual specimens—24 in number.

Price \$15.00

### WARD'S NEW GEOLOGY CATALOGUE #583—Price \$1.00

Ward's Mineral Specimen Catalog—S.M. 11—Free

Ward's Nature Guide Catalog—No. 589—Free

All prices are list at Rochester, New York.

## WARD'S NATURAL SCIENCE ESTABLISHMENT, Inc.

P. O. Box 1712

Rochester 3, New York

## GEMS AND MINERALS

The Rockhound's Own Magazine

is a national magazine for the amateur GEM CUTTER, MINERAL COLLECTOR, SILVERSMITH, GEOLOGIST, and ROCKHOUND.

Each MONTHLY issue is chuck full of interesting and helpful information on field trips, gem cutting, gems, minerals, "how-to-do-it" features, hints, tips, pictures, club and show news, and advertisements all aimed especially at helping the rockhound get more from his hobby.

GEMS AND MINERALS is owned by the California Federation of Mineralogical Societies, a federation of over 75 rockhound clubs. It is the OFFICIAL MAGAZINE of both the California and American Federation of Mineralogical Societies.

Published EVERY Month  
One Year (12 issues) ONLY

**\$3.00**

or write for free brochure

GEMS AND MINERALS

P. O. Box 687

Mentone, Calif.

BACK ISSUES OF

## EARTH SCIENCE

We are overstocked on a number of back issues and need badly the space for our current files. Many of these surplus copies are of the very best published.

There are 30 different issues to select from, BUT

WE WILL MAKE OUR OWN  
SELECTION

Five issues.....\$1.25 (Postpaid)  
Twelve issues.....\$2.35

As long as they last—first come,  
first served.

## EARTH SCIENCE

BOX 1357, CHICAGO 90



LETTERS: Yes we get letters, and they are appreciated.

Hamilton, Ontario.

Dear sirs: Along with my subscription renewal, I am writing this note to tell you how much I enjoy your informative magazine.

It is complete in every way, and its articles keeps one up to date on all of the things that are of special interest to the Rockhound.

May you keep this fine work up for many years to come.

(Signed) Eugene Gryski.

Oklahoma City, Okla.

Gentlemen: Enclosed find \$2.00 for my Earth Science renewal. I have been enjoying Earth Science too long to let your subscription expiration notice slip by me. Keep up the good work you are doing.

(Signed) Domer L. Howard, President.  
Rocky Mountain Federation.

Milwaukee, Wisconsin.

Sirs: Please note my change of address on your subscribers list. I do not wish to miss a single issue of your fine magazine.

(Signed) Mr. Andrew Haynes.

**DEATH GULCH:** "In the eastern part of the park (Yellowstone) is a ravine known as Death Gulch where there is a particularly heavy escape of deadly gases. . . . It appears that the larger animals avoid the locality at the present time." However, in 1880 W. H. Weed who named this feature reported finding carcasses of six bears in the Gulch and in 1897 Dr. T. A. Jagger found eight bears in this "Natural bear trap." It remains for some future investigator to determine whether the lethal effects are due to CO<sub>2</sub> or whether poisonous H<sub>2</sub>S is present in sufficient concentration to play a part.

(Douglass, I.W. "Some Chemical Features of Yellowstone National Park," Jour. Chem. Ed. Vol. 16, 1939, 434.)

**IT'S POSSIBLE:** While talking to Rev. Austin of St. Pauls Church, I mentioned that Trilobites of this section of the country were generally found in a curled up position (the Trilobites, that is). I also explained that it wasn't too certain why they didn't die in a flattened position as those of the West did. He explained to me that this was an exceptionally easy problem to solve. "It without a doubt is a matter of economics. The Trilobites of this area were more economical and able to make ends meet."

Bob Blake, in Michigan Gem News.

**REMEMBER!** December 8th will be the deadline for all new ads for the February issue. DEADLINE for REPEAT ads and NEW PLATES will be December 15th.

## PARADISE GEMS

### NORTHERN CALIFORNIA MATERIALS

**QUARTZ CRYSTAL SELECTION**—5 specimen crystals from Northern California, including crystals with color, phantom, inclusions and etc., each crystal distinctively different. Price \$3.00.

**TRINITYITE**—Slabs 3/16" to 1/4" in thickness and heavy with native copper. \$3.75 per slab. Approximately 15 square inches.

**YANKEE HILL VESUVIANITE** — Bright green spots and pattern on opaque white. This unique and outstanding material is very striking in appearance and takes an excellent polish. \$2.50 per slab. Approximately 4 square inches.

**GARDNERITE**—An especially fine pastel jasper of unusual beauty from the Eastern slope of the Coast Range. This material of excellent gem quality with its unique and intricate pattern in strong pastel colors is new and entirely different. \$2.50 per slab. Approximately 10 square inches.

All above sent postpaid in U.S.A.  
California purchasers add 4% sales tax.

## PARADISE GEMS

6676 Paragalia Way

Paradise, Calif.

**STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF Earth Science, published bi-monthly at Mount Morris, Illinois, for December, 1958.** 1. The names and addresses of the publisher, editor and business managers are: Publisher, Earth Science Publishing Co., Inc., Box 1357, Chicago, Ill.; Editor, Dr. Ben Hur Wilson, 406 Grover St., Joliet, Ill.; Business manager, Dr. J. D. Willems, 29 So. La Salle St., Chicago, Ill. 2. The owner is: (if owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as those of each individual member, must be given.) Earth Science Publishing Co., Inc., Box 1357, Chicago, Ill.; W. H. Allaway, 4729 Prince St., Downers Grove, Ill.; Mildred Babbitt, 149 Northgate Rd., Riverside, Ill.; Earl Cornwell, 5426 Carpenter St., Downers Grove, Ill.; J. D. Willems, 29 So. La Salle St., Chicago, Ill.; B. H. Wilson, 406 Grover St., Joliet, Ill. 3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds mortgages or other securities are: None. 4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bon fide owner. W. H. Allaway, Secty. Assoc. Editor. Sworn to and subscribed before me this 20th day of September, 1958. Jack E. Bowers, Notary Public. (My commission expires November, 1960).

## CLASSIFIED ADVERTISING

Rate: Eight Cents per word, per issue. Minimum \$2.00, payable in advance. No proofs or copies for checking are furnished. Introductory words will appear in CAPITALS. When additional capitalization is required, each such word counts as two words. No charge for name and address.

**SPECIAL GET ACQUAINTED OFFER.** Add life and brilliancy to your fluorescing display with my new natural wood, fluorescing two to four brilliant colors each. A \$10.00 collection, eighteen 3 to 5 inch specimens, finished in many designs, only \$6.75 postpaid. Will include one set larger size book-ends. All identified with scientific and common names. An unusual Christmas present. Have one of the largest mineral displays in the Middle West. STOP! Make your own selections. HARVEY R. SHULL, 1516 South Market, Oskaloosa, Iowa.

**QUARTZ CRYSTALS ON MATRIX.** A collector's dream. Sparkling crystals formed over 300 million years ago in Ordovician rocks of Columbia County, New York. Crystals vary in length from 1/2" to 1 1/2". Specimens on matrix, 2" x 2", \$1.50; 2" x 3", \$2.25; 3" x 4", \$4.24; 3" x 8" to 4" x 7", \$7.50. Museum pieces, 8" x 12" and larger, \$10.00. Assorted small individual crystals, 12 for \$1.00. All items shipped postpaid. HALLENBECK'S MINERAL SHOP, Eichyush Rd., Kinderhook, New York.

**EIGHTEEN IGNEOUS ROCKS** from Rocky Mountains. A completely classified set for geologists, students, prospectors and rockhounds. Six of the 18 emphasizes igneous minerals. Roughly trimmed to average one to 1 1/2 inches. Rock chart with six pages of identification information—all for only \$2.00, plus postage on 3 lbs. Satisfaction or prompt refund. EDWARD OLER, 3017 Stuart St., Denver 12, Colorado.

**ROCKHOUND "COLLECTORS"!** contact us for the rare, choice, select, odd and unusual. Gemstones, minerals, carvings, fossils, artifacts, relics, etc. Open days and evenings. BOISE, GEM SHOP, 711 Fort Street, Boise, Idaho. Phone, 3-9961.

**SMOKY MOUNTAIN SPECIMENS!** One quarter brings you two purple sapphires plus price list. Cabinet specials: ruby in smaragdite, Calamites, Lepidodendrons, quartz crystal clusters, Tennessee geodes, giant staurolites. OLE ROCKHOUND MUSEUM, 422 Ohio Avenue, Etowah, Tennessee.

**ROCKHOUNDS—INEXPENSIVE QUALITY** mountings. Send for free illustrated literature listings Earbacs—Neckchains—Cuff links—Bolo Slides—Bell Caps—Cements. MYLES, Box 176, Dept. S., New York 8, New York.

**EPIDOTE — PISTACHIO GREEN**, some black lace effect, some yellow banded, some plain. Very hard; takes beautiful polish. Specimen 25c. Price list on request. Dealers discount. BARBARA JEAN MINES, Dept. B, P. O. Box 242, Cave Creek, Arizona.

**FOSSILS, U. S.**, also British ammonites, plectypods, plants, graptolites, and brachiopods. Classified. ROBERTA R. BOWMAN, 1030 Ohio Avenue, Lemoyne, Pa.

**GEM MATERIAL** shipped prepaid. 100 lbs., \$16.50. Agate, Palm wood, and Jasper. MORTON MINERALS & MINING, 21423 West Highway 66, R.F.D. 1, Barstow, California.

**PIECE OF PETRIFIED WOOD** and 3 halves (variety) agate Geodes and Thundereggs, \$2.50, postpaid. 7-power Magnifying glass, with light, \$4.95, postpaid. WALT'S PLACE, 1 1/2 miles north of Nyssa, Oregon on 20 & 26.

**CULTURED PEARL JEWELRY** is easy to make. Simply cement pearls in the fittings and you are done. Pearls are first grade, ground on one side for easy cementing. Fittings are beautiful lacy filigrees in gold plate or sprhodium. Very rich looking finish. Any kind of cement can be used, as the pearls are protected in the fittings. Pearls, large, 6mm., almost 1/4" wide, each 60c; 12 for \$4.80, 48 for \$16.80. Ear bob fittings with ear bob attached, pair 60c, 12 pieces \$2.50, 48 pieces \$8.50. Pendant fittings to match ear bobs, each 35c, 12 for \$2.50, 24 for \$4.25. Fine necklace chains for pendants, 40c each, 6 for \$1.90, 12 for \$3.25, 36 for \$8.90. Postage extra. 10% tax if not for resale. Money back guarantee. M. W. AVERY, 332 Columbia Blvd., Woodridge, New Jersey.

**MOONSTONE PAGODA EARRINGS, SS**, \$5.00/pr. Red Flame agate, Mexico, slabs, 40c/in. Shattuckite, Arizona, slabs, 40c/in. Malachite and Olivene specimens. Write STAN'S ROCK SHOP, Rt. 2, on Center-ville Road, Carmi, Illinois.

**ROCKHOUND'S BOOK OF VERSE.** The perfect Christmas gift for that hard to please Rockhound wife, husband, pebble-pup, friend, relative, club officer, or dealer. This book is beautifully illustrated and is humorous, entertaining, and down-to-earth. Sent postpaid to any address for \$2.00 a copy. Write FRAN SCHILLER, Luke, Maryland.

**IDAHO ROCKS!** 15 Emerald Creek Garnets—\$1.00, or \$5.00/lb. Tumbled (shows the stars), \$2.00/oz., \$20.00/lb. Specimens in biotite \$5.00. **PINK OPAL**, jewelry grade, \$2.50/lb., very popular. **SILLIMANITE**, Epidote, Picture rock; cutting quality, \$1.50/lb. Two **KYANITE** crystals, \$1.00, 1/lb. **TOURMALINE**, massive, \$2.00. Send \$3.00 for big value variety. **TUPPER JONES**, Elk River, Idaho.

**1959 MINERAL CALENDAR.** Ideal Christmas gift. Six beautiful mineral displays in new Smithsonian Gem and Minerals Hall reproduced in full color. Special Department, **W. HEINTZ CORPORATION**, 8351 Central Avenue, Washington 27, D. C. Price, \$1.00 with order.

**PARTNER WANTED** to prospect two thousand acre mineral and gem deposits. Must have knowledge of mineral identification. Address Earth Science, P.O. Box 1357, Chicago 90, Ill.

**ULTRA VIOLET LAMPS FOR SPECTACULAR FLUORESCENCE.** Seven custom-built models from \$14.50. Also accessories for portable operation anywhere. Literature free. **RADIANT ULTRA VIOLET PRODUCTS**, Manufacturers, Dept. ES, Cambria Heights 11, N. Y.

**HIGHEST CASH PAID** for old Gold, Jewelry, Gold teeth, Diamonds, Watches, Silver rings, Antiques. Mail articles today. Information free. **CHICAGO GOLD REFINING CO.**, 6 E. Monroe, Dept. 173, Chicago 3, Illinois.

**TWELVE NEW MEXICO MINERALS**, \$2.00. Six fluorescents, \$1.06. Five Crystallized minerals, \$1.06. All three sets, \$4.00. Average size, one inch. Lists for a stamp. **BOB H. HARTSON**, Winston 4, New Mexico.

**SPECTROSCOPE** for quick chemical and ore analysis, \$3.00. Results like a \$30.00 instrument. Illustrated, cloth instruction book for qualitative and quantitative analysis, 220 pages, \$4.00. **CUTTING SCIENCE CO.**, 26278 Aratradero Rd., Los Altos, Calif.

**TUMBLING MATERIAL**, variety; semi-precious stones, rough. Crystals; Minerals; Rock novelties. Welcome All! **HOUSE OF CRYSTALS ROCK SHOP**, Rt. 1, Box 283-A, Hot Springs, Ark., Hwy. 7 South, 12 miles.

**CELLOPHANE SPECIMEN ENVELOPES**, 500 for \$2.50, 1000 for \$4.50, 5000 for \$20, 2½" x 4¼" size. Postpaid. Special sizes available in Cellophane or Polyethylene. Order today, or write listing your needs. **CELLOPHANE ENTERPRISES**, 2905 McKinley St., Fort Worth 6, Texas.

**YOU'LL LOVE ARKANSAS MINERALS** to give or receive! 10 beautiful generous specimens for \$1.50, gift boxed. Includes rare wavellite and aegirite. **CORBIN'S**, Box 666, Yellville, Ark.

**GEM MATERIAL** shipped prepaid, 100 lbs., \$16.50. Agate, Palm wood, and Jasper. **MORTON MINERALS & MINING**, 21423 West Highway 66, R.F.D. 1, Barstow, Calif.

**GEM CUTTING**, the standard book for the beginner. Accepted and studied wherever people read English and are interested in gems. 248 pages, 135 illustrations. \$4.50. **WILLEMS**, Box 1515, Chicago 90.

**SPECIAL GET ACQUAINTED OFFER.** Add life and brilliancy to your fluorescing display with my new natural wood, fluorescing two to four brilliant colors each. A \$10.00 collection, eighteen 3 to 5 inch specimens, finished in many designs, only \$6.75 postpaid. Will include one set larger size book-ends. All identified with scientific and common names. An unusual Christmas present. Have one of the largest mineral displays in the Middle West. **STOP!** Make your own selections. **HARVEY R. SHULL**, 1516 South Market, Oskaloosa, Iowa.

**ATTENTION ROCKHOUNDS:** Am offering the following materials, 100 lbs. mixed for \$25.00, shipped prepaid. Pink Dolomite w/Chloride, white & brown Travertine, Tick Canyon Howlite, Rain Bow Ridge Jasper, Oolite—Death Valley, Onyx—Panamint Valley, Ankerite w/Calcite. This material is not junk and the chunks are from 4 lbs. up. Try this offer; you won't be sorry. **SEARLES VALLEY ROCK SHOP**, P. O. Box 405, Argus, Calif.

**SALT LAKE CITY, UTAH.** Drop in when out this way. We have specialized in Equipment, Findings, Supplies, etc. for Rockhounds since 1950. You may pick up your Free copy of Utah locations, or send a stamped envelope. However, would rather be blessed with a visit. No catalog. **KEN STEWART'S GEM SHOP**, 136 West South Temple, (½ block west of Temple Square).

**ASSAYS.** Complete, accurate, guaranteed. Highest quality spectrographic analysis for minerals, metals, and rare earths. Only \$5.00 per sample. **REED ENGINEERING:** 620T So. Inglewood Ave., Inglewood 1, Calif.

**FREE CRETACEOUS AMMONITE**, with order for Texas fossils at only \$6.00 for 50, Postpaid. All different, labeled, identified and packaged in cellophane envelopes. Choice of Pennsylvanian age, Cretaceous age, or mixed. **FOSSILS UNLIMITED**, 2905 McKinley St., Fort Worth 6, Texas.

**BEAUTIFUL UTAH NODULES** from Dinosaurland, identified by some as pseudomorphic barite rose. Chunks, \$2.50 per lb. or 50c per sq. in. Snowflake obsidian and silver onyx, 25c per sq. in. **CAPS ROCKS**, P. O. Box 488, Palmdale, California.

**FOSSIL SPECIMENS:** From the Devonian Period of Ohio; nice collection, \$1.25. Ten different brachiopods, \$1.50. Three different corals, 75c. Gastropod, 25c. Pelecypod, 35c. Trilobite (Phacops), \$1.00, \$2.00, \$3.00 and \$5.00. **DON H. WHITE**, Box 181, Ottawa Lake, Michigan.

**FACETING MATERIAL WANTED.** Want jobbers prices on all kinds of faceting material, for sale at wholesale, to dealers. **KING LAPIDARY**, The Boulders, Evergreen, Colorado.

**FOSSILIZED PLANTS** of the Coal Age, over 250,000,000 years old. Perfectly defined plants (not shale impressions). Clear cabinet Specimens, 25 cents per inch (length). North Carolina purple sapphires, 35c to \$1.00 each. **OLE ROCK-HOUND MUSEUM**, 422 Ohio Avenue, Etowah, Tennessee.

**JASPER FROM CAVE CREEK, ARIZONA;** varied colors, some quartz streaks. Slabbed, plain, or tumbled. Price list on request. Seven specimens, \$1.00, postpaid. Dealers discount. **BARBARA JEAN MINES**, Dept. B, P. O. Box 242, Cave Creek, Arizona.

**WYOMING JADE**, generous slab for \$1.00; choice, black olive snowflake. Good cutting material in the rough; algae, colorful jasper, turritella oolite, and agates, 25c lb. Large variety of tumbling material, 5 lbs. for \$1.00; add postage. Visit our shop, rockyard, and museum. Always welcome. **WITKA'S**, Hi-way 30, West end, Rock Springs, Wyo.

**THE BOOK OF MINERAL PHOTOGRAPHS**, 118 pages, octavo, over one hundred pages of excellent illustrations of fine minerals and rocks with descriptions. Indexed. \$1.68 postpaid. **B. M. SHAUB**, 159 Elm Street, Northampton, Mass.

**QUARTZ CRYSTALS.** Unusual specimens from several localities. Odd twinning and other features. Reasonable prices. On approval. **CLAUDE H. SMITH**, Box 291, Geneva, New York.

**PACKAGED FOSSIL KITS**, Attractive cellophane packaged fossil sets. Each Kit complete with ten fossil specimens, all different, labeled with complete identity . . . Plus, educational text, "THE NATURE OF FOSSILS."

**YOUNG EARTH SCIENTIST KIT** \$1.25  
**PENNSYLVANIAN AGE KIT** \$1.50  
**CRETACEOUS AGE KIT** \$1.00  
Postpaid. Excellent gift items for that young earth scientist. **FOSSILS UNLIMITED**, 2905 McKinley St., Fort Worth 6, Texas.

**ROCK'S SLABGRABER**, \$4.95 postpaid. Authorized dealers for **ROCK'S Lapidary Equipment**; also **HY-POL** tumblers and grits. Have stamps, rifles, scopes, to trade for good cutting material. **HAZETT STAMP SHOP**, 620 N. Grant St., Bay City, Michigan.

**ALMANDITE GARNET CRYSTALS** from Ontario, Canada. **SPECIMENS ONLY—NOT GOOD FOR CUTTING.** Here is your chance to add a real garnet crystal to your collection. Walnut size, \$1.00 to \$2.00; golf ball size, \$1.50 to \$3.50; egg size, \$2.50 to \$5.00; baseball size, \$7.50 to \$15.00; grape fruit size, \$25.00 to \$50.00. Egg size and under, available in matrix. Add 25% to above prices. For doubles, add 50% to above prices. Write for free price list. **OTTAWA VALLEY GEM SHOP**, Dept. ES 20, 1310 Bank Street, Ottawa, Canada.

50c **BRINGS YOU 1½" PIECE** of "hot-hot" fluorescent uranium, 3 rough sapphires, and our catalogue featuring over 500 selected specimens. **WHITE MOUNTAIN MINERAL SHOP**, Campton, New Hampshire.

*Announcement:*—We have been officially informed that the "The **GEMSTONE Magazine**, and **Northwest Mineral News**", the official organ of the Northwest Federation of Mineralogical Societies, permanently suspended publication with their June-July 1958 issue. **EARTH SCIENCE** regrets existing conditions which has made this a necessity and shall miss its informative pages which have come regularly to our desk. Ed.

**IT'S LATER THAN YOU THINK—**

**IT'LL BE HERE BEFORE YOU KNOW IT—CHRISTMAS!!!  
FOR THAT SPECIAL "SOMEONE"—THE BOOK—  
"WILMINGTON COAL FLORA" WOULD MAKE A WONDERFUL GIFT**



Now! An  
Arizona Book

"MINERALOGICAL  
JOURNEYS IN  
ARIZONA"

by A. L. Flagg

- First book to cover entire field of mineralogy in Arizona.
- First published complete list of Arizona minerals.
- Quickie map to the many locations described.
- Colored plates of Arizona minerals.
- Fifty years of mineral collecting and research in Arizona by the dean of mineral collectors, A. L. Flagg.
- A book everyone interested in minerals will want, whether they ever expect to visit Arizona or not.\*

• Beautifully Bound in Cloth •

Price \$4.85

\*Ask your Dealer; if he cannot supply write:—

**BITNER'S**

P.O. BOX 1025 SCOTTSDALE, ARIZONA

**Mineral Specimens**

**Books**

**Microscopes**

**Collecting Equipment &  
Supplies**

Catalog 25c

**SCOTT WILLIAMS  
MINERAL COMPANY**

2346 S. Scottsdale Road  
Scottsdale, Arizona  
WHitney 5-0803



**Notice to Advertisers**

Our advertisers are respectfully advised that the advertising deadline for the next issue will be DECEMBER 8th for all NEW ADS. Deadline for REPEAT ADS and for NEW PLATES submitted will be DECEMBER 15th.

**INDEX TO ADVERTISERS**

Alaska Lapidary Service	22
Albanese, John S.	19
Allen Lapidary Equipment Co.	8
Am. Gem and Min. Suppliers Assn.	31
Bitner's	28
Classified Ads	25, 26, 27
Earth Science	23
Eckert Mineral Research	19
Gem Cutters Guild of America	2
Gems and Minerals	23
Geode Industries	31
Goodwin, Edwin J.	19
Kaye, C. R., and Sons	22
Kyte, Ken	22
Lapidary Equipment Co., Inc.	21
Lor-Lew Design	21
Midwest Federation	32
Mineral Science Institute	19
Minerals and Gems	22
Minerals Unlimited	22
Office Specialties	31
Paradise Gems	24
Patapow, Andy M.	8
Prospectors Shop	31
Riley Rock Shop	31
Roberts, Tom, Rock Shop	31
Rocks and Minerals	22
Rogmer	31
Romanella, R. C.	31
Stewart's Gem Shop	20
Vellor Company	21
Victor Agate Shop	21
Ward's Nat. Science Est., Inc.	23
Waskey, Frank	20
White Mountain Mineral Shop	22
Willems	21
Williams, Scott, Mineral Company	28



# INDEX: Volume 11 (1958)

## A

*Abrasive Materials*, October, p. 19  
*Age Of The Earth, History of Ideas On*,  
August, p. 23

AILES, PROFESSOR

Age of the Earth, August, p. 23

ALBANESE, JOHN S.

Know Your Minerals, August, p. 15

ALBRIGHT, DAROLL

Shop Hints on Tumbling, February, p. 29

ALLAWAY, WILLIAM H.

Magnet Cove, February, p. 15

ALLAWAY, WILLIAM H. (with EARL D.  
CORNWELL)

Typical Rock Forming Minerals, June, p. 17

Altitude. *How High Can You Get?* August,  
p. 20

Ammonites. *Pierre Shale Fossils*, February, p. 16

ANDERSON, SIGRID

Advice on How to Reach a Beryl Mine,  
April, p. 19

Argon—40. *Determining the Age of a Meteorite*.  
Argonne Laboratory, August, p. 17

## B

*Bauxite, Hawaiian*, August, p. 16

Beryl. *Advice on How to Reach a Beryl Mine*.  
April, p. 19

*Beryl Mountain*, April, p. 18

Boron Carbide. *Abrasive Materials*, October, p.  
19

BROWN, GUS (with DAN FINCH)

New Horizons with the V-Lock, June, p. 7  
*Bruneau Canyon*

*Jasper*, December, p. 00

## C

Calcite. *Caves—Origins and Features*, June,  
p. 13

*Callinite: Stone of Sacred Heritage!* October,  
p. 17

*Caves—Origins and Features*, June, p. 13

Cephalopods, *Pierre Shale Fossils*, February,  
p. 16

CORNWELL, EARL D.

*Abrasive Materials*, October, p. 19

Earth Science Visits Some Rock Shops  
February, p. 8 and April, p. 24

History of Ideas on the Age of the Earth  
(Notes on Talk by Professor Ailes of the  
British Geological Survey), August, p. 23

CORNWELL, EARL D. (with WILLIAM H.  
ALLAWAY)

Typical Rock Forming Minerals, June, p. 17  
*Coulee, Gran. Skeleton and Fossil in the Gran*

*Coulee*, October, p. 9

*Crystals and Optical Instruments*, June, p. 11

## D

Diatoms. *Fresh-Water Diatoms Found in the  
Atlantic*, April, p. 13

Divides. *How High Can You Get?* August,  
p. 20

Dry Falls. *Skeleton and Fossil in the Gran  
Coulee*. October, p. 9

## E

*Earth, History of Ideas on Age of*, August,  
p. 23

EVANS, T. O.

Prospecting for Uranium in New Mexico,  
April, p. 9; and December p. 15

## F

FINCH, DAN (with GUS BROWN)

New Horizons with the V-Lock, June, p. 7

FLEENER, DR. FRANK L.

Ginkgo Biloba—A Living Fossil, February,  
p. 22

Petrified Lightning, October, p. 13

*Fossils, Pierre Shale*, February, p. 16

Fulgurites. *Petrified Lightning*, October, p. 13  
*Furnaces, Early Iron, of Western Pennsylvania*,  
August, p. 9

## G

Garnet. *Abrasive Materials*, October, p. 19

Ginkgo Biloba—A Living Fossil, February,  
p. 22

Ginkgo Petrified Forest. *Skeleton and Fossil  
in the Gran Coulee*, October, p. 9

Glass, natural (Fulgurites) *Petrified Lightning*,  
October, p. 13

*Gran Coulee, Skeleton and Fossil in the*,  
October, p. 9

## H

Hematophanite. *Know Your Minerals*, August,  
p. 15

HEMINGWAY, MRS. CHARLES E.

Midwest Federation of Mineralogical and  
Geological Societies; 18th Annual Con-  
vention, October, p. 6

HESS, DAVID C. et al

Determining the Age of a Meteorite,  
August, p. 17

HINDMAN, JO

*Skeleton and Fossil in the Gran Coulee*,  
October, p. 9

I

Furnaces, Early Iron, of Western Pennsylvania, August, p. 9

J

JAYNE, WALTER H.  
Putting the Eye in Tigereye, February, p. 28

L

Lapidary. *New Horizons with the V-Lock*, June, p. 7  
Lechatelierite. *Petrified Lightning*, October, p. 13  
Limestone. *Caves—Origins and Features*, June, p. 13

M

Magnet Cove, February, p. 15  
Magnetism, Nature of, February, p. 11  
Magnetite. Magnet Cove, February, p. 15  
Meteorite. *Determining Age of*, August, p. 17  
*Midwest Federation, 18th Annual Convention*, October, p. 6  
Minerals, Know Your, August, p. 15  
Minerals, Typical Rock Forming, June, p. 17

N

New Mexico, *Prospecting for Uranium in*, April, p. 9

O

Optical Instruments, *Crystals and*, June, p. 11

P

*Petrified Lightning*, October, p. 13  
*Petrified Logs, Hunting*, April, p. 15  
PIERCE, KEITH A.  
Crystals and Optical Instruments, June, p. 11  
*Pierre Shale Fossils*, February, p. 16  
Pipestone. *Calinite: Stone of Sacred Heritage!* October, p. 17  
Poison Canyon. *Prospecting for Uranium in New Mexico*, April, p. 9  
Potassium—40. *Determining the Age of a Meteorite*, August, p. 17  
POWELL, BERNARD W.  
Early Iron Furnaces of Western Pennsylvania, August, p. 9  
Fresh-Water Diatoms Found in the Atlantic, p. 13  
PREWITT, L. D.  
Caves—Origins and Features, June, p. 13  
PUGH, EMERSON  
The Nature of Magnetism, February, p. 11

R

*Rock Forming Minerals, Typical*, June, p. 17  
*Rock Pile, Volunteer for the*, December, p. 9  
*Rock Shops, Earth Science Visits Some*, February, p. 8 and April, p. 24

S

*Santafite*, April, p. 20  
SCAMMON, C. H.  
Hunting Petrified Logs, April, p. 15  
Selenium Poisoning. *Prospecting for Uranium in New Mexico*, April, p. 9  
Silicon Carbide. *Abrasive Materials*, October, p. 19  
Speleothems, calcite. *Caves—Origins and Features*, June, p. 13  
Spelunkers. *Caves—Origins and Features*, June, p. 13

T

*Thompsonite, A Dainty Gemstone*, Dec., p. 12  
*Tigereye, Putting the Eye In*, February, p. 28  
Todilto limestone. *Prospecting for Uranium in New Mexico*, April, p. 9  
Trinitite. *Petrified Lightning*, October, p. 13  
*Tumbling, Shop Hints on*, February, p. 29  
Tyuyamunito. *Prospecting for Uranium in New Mexico*, April, p. 9

U

*Uranium, Prospecting for in New Mexico*, April, p. 9 and December, p. 15

V

*V-Lock. New Horizons with the*, June, p. 7

W

WETHERBEE, MRS. JULIAN  
Beryl Mountain, April, p. 18  
WILLEMS, DR. J. DANIEL  
*Thompsonite, A Dainty Gemstone*, Dec., p. 12  
WILSON, DR. BEN HUR  
How High Can You Get? August, p. 20  
Hawaiian Bauxite, August, p. 16  
*Calinite: Stone of Sacred Heritage!* October, p. 17  
Wood, Petrified, *Hunting Petrified Logs*, April, p. 15

Z

ZEITNER, JUNE CULP  
*Pierre Shale Fossils*, February, p. 16  
ZOOK, NANCY GIBBONS  
Volunteer for the Rock Pile, December, p. 9

---

NITROGEN FROM FUEL OIL: Canadian Industries Ltd. has announced the first ammonia plant using fuel oil as raw material. Air-liquefaction unit produces nitrogen for ammonia and oxygen (separated from nitrogen by distillation) for partial combustion of oil in a "Texaco generator." Generator exit gases supply hydrogen. Hydrogen and nitrogen are converted to ammonia at roughly 5,000 psi. and 900° F. over an iron-containing catalyst.

## TESTED GEM MATERIALS

**Frantom Equipment**  
**Mineral Specimens -**  
**Mountings - Slabs - Tools**  
**Supplies - Books**

Rough—1 lb. to 1000 lbs.

*Special*

10mm Cabochon hearts  
 Drilled for screw eyes

**TOPAZ — AMETHYST — TOURMALINE**

\$2.50 each

\$4.80 pair



**Rognor**

LAPIDARY SUPPLIES

106 Fourth St.

WILMETTE, ILLINOIS

Phone ALPINE 1-1912

CLOSED WEDNESDAY  
 AND FRIDAY

SORRY—NO CATALOGS

## MIDWEST GEM TRAILS

This is the book you've been waiting for. A field guide for the gem hunter, the mineral collector, and prospector. Hundreds of localities are described and illustrated by June Culp Zeitner of Mission, South Dakota . . . The author has visited most of the localities described.  
**12 STATES COVERED**  
 Including South Dakota, Minnesota, Michigan, Wisconsin, Illinois, Iowa, Kansas, Nebraska, North Dakota, Indiana, Ohio and Missouri . . . The first specialized guide book especially for the Midwest region.

Midwest Gem Trails—Price \$2.00

OFFICE SPECIALTIES

2364 No. 58th Street

Seattle 3, Wash.

## TOM ROBERTS ROCK SHOP

1006 South Michigan Avenue  
 Chicago 5, Illinois  
 Wabash 2-7085

Change In Hours:

Monday through Saturday  
 10:00 A.M. to 5:30 P.M.

FINE SMOKY QUARTZ TOPAZ AT SPECIAL PRICES

"FACETED GEMS"

First grade stones.  
 10 x 12 m/m oct. & ovals,  
 12 m/m rounds  
 @ \$1.00 ea. or  
 10 for \$8.50  
 Add 10% F. E. Tax

**R. C. ROMANELLA**

22 West 48th St.

New York 36, N.Y.

## Mexican Thumbnails

Suite of 10 uncommon minerals,  
 all nice groups \$3.50

Set of 20 in compartmented box,  
 all nice groups or single xls, \$7.50  
 (No junk or common ones in above)



**THE  
 PROSPECTORS  
 SHOP**

201 W. San Francisco Santa Fe, N. M.

For an unflinching supply of cutting material and equipment, depend on a FULL TIME Lapidary Shop. Open daily except Tuesday and Sunday morning.

**THE RILEY ROCK SHOP**

R. D. 2, Dialton Rd. Springfield, Ohio  
 Phone: WO 4-1460



Individual searches made for inquiries about sources of certain items. No general lists distributed.

**AMERICAN GEM & MINERAL  
 SUPPLIERS ASSOCIATION**

Mail: 3657 West 50th Place, Los Angeles 43, Calif.

## GEODES

We specialize in crystallized GEODES with crystal interiors and mineral inclusions. Specimens in stock up to 125 pounds. **FREE LIST of Geodes, Minerals, Specimens and Gem Materials on request.**

LAPIDARY EQUIPMENT

We are authorized dealers for HIGHLAND PARK, HILLQUIST, FRANTOM, STONE-MASTER, B.&L., POLY ARBORS.

MINERALIGHTS  
 AND ULTRA-VIOLET LAMPS.

Free list on request.

MOUNTINGS

We have a complete stock of MYCO mountings in STERLING SILVER and 10K GOLD. Order from our large stock. **New 40 Page Mountings and Findings Catalog Now Out.** Send for your free Copy today.

GEM MATERIALS

New shipment of AUSTRALIAN OPALS, fine quality. PRACTICE OPALS with good fire at \$4.00 to \$6.00 per oz. QUALITY OPALS for the advanced cutters in WHITE, JELLY, and new, top-quality GREYS, from \$10.00 to \$80.00 per oz. BLACK OPAL from Lightning Ridge, for specimens or for cutting doublets, at \$1.00 per piece, postpaid.

LAPIDARY & GEM CUTTING SUPPLIES &  
 OTHER GEM MATERIALS IN STOCK.

Don't Delay—Order Today

We welcome visitors, stop in and see us. We're conveniently located on U.S. Highway 34.

**GEODE INDUSTRIES**

106 W. Main St.

New London, Iowa

Midwest Federation  
of  
Mineralogical &  
Geological Societies



**Officers 1958-59**

LaFayette Funk ..... President  
J. W. Pagnucco ..... Vice President  
Bernice Rezin ..... Secretary  
O. M. Fether ..... Treasurer  
Ben Hur Wilson ..... Historian-Custodian

**Regional Vice Presidents**

Morilla Wilson ..... Central  
Jerry Hudachek ..... Eastern  
Wm. J. Bingham ..... Northern  
John Hufford ..... So. Western

**Membership & Publicity**

Gus Brown, Chairman ..... Verne Montgomery, Co-Chairman

**ATTENTION: ALL ROCK HOUNDS AND MINERALOGICAL SOCIETIES who have not as yet affiliated with the MIDWEST FEDERATION.**

**IN UNION THERE IS STRENGTH**

Through affiliation with the Midwest comes the opportunity to participate in our Annual Conventions, bulletin exchange programs, and receive information from our committees on each branch of the Earth Sciences.

It is not essential that one belong to a club in order to be eligible to join the Midwest Federation.

You will be very welcome and you will find the advantages to be gained far exceed the slight cost and effort expended.

The Midwest Federation comprises 48 clubs and numerous individuals, and is a branch of the larger American Federation which comprises numerous Federations throughout the U. S. and Canada.

**For further details, contact Bernice Rexin, 3934 North Sherman Blvd., Milwaukee 16, Wisconsin.**

**EARTH SCIENCE, Official Magazine**

P. O. BOX 1357, CHICAGO 90, ILLINOIS

